ASIA CLEAN ENERGY FORUM 2026

Beyond Transition: Building Secure, Resilient, Inclusive, and Intelligent Energy Systems

8–11 June | ADB Headquarters, Metro Manila, Philippines

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Next Generation Energy Systems in Central, West and East Asia: Technology, Markets and Regional Integration

Regional Balancing Market for CAPS: Turning Idea into the Action

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11 June 2026 | 9 am- 12:30 p.m.
(GMT+8)

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Structural Shifts and Emerging Trends in the Energy Systems

Trends	Challenges	Solutions	Enabler
Shift in Generation *Conventional vs. Renewable*	**Grid Instability** *Frequency and Voltage Deviations*	**Smart grids** *Real Time Balancing and Dispatch*	**Flexibility** *Managing the Timing of Supply and Demand*
Topology Shift *Centralized vs. Decentralised*	**Grid Congestion** *Transmission Capacity Constraints*	**Intelligent markets** *Dynamic Pricing and Demand-Response*	*Optimizing Power Flows across the Network*
Demand Profile Shift *Fixed vs. Intermittent*	**Volatile Markets** *Price Instability*		*Up and down Regulation of Generation and Consumption*

CAPS Countries: Trends and Challenges

- Growing electricity demand, with regional consumption projected to increase by around 40% by 2030
- Increasing share of renewables
- Seasonal hydro–thermal imbalance across countries
- Aging generation and transmission infrastructure
- Weak regional grid integration
- Grid congestions and lack of flexibility
- Limited capability for real-time cross-border balancing
- Lack of Harmonized Pricing Mechanisms
- Differences in market structures and regulatory framework

CAPS Countries: Consequences

- Blackouts
- Generation curtailment
- Load shedding and supply interruptions
- Inability to meet peak demand reliably
- High system balancing cost and energy losses
- Inefficient utilization of available reserve resources
- Reduced system flexibility and resilience
- Limited ability to integrate additional renewable energy

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The Rationale for a Regional Balancing Market in CAPS

Enabling Higher RE Integration
Regional balancing market will provide the flexibility needed to manage variability of REs and maintain system stability

Better Use of Existing Resources
Access to the pool of reserves allow systems to use available capacity more efficiently and lower overall cost

Stronger and Smarter Grid Operations
Advanced monitoring, control and information sharing reduce congestion and improve real-time decision-making

Investments in Flexibility
Regional balancing market will encourage investments in storage, flexible generation and demand response solutions

Shared Benefits and Lower Risks
Coordinated balancing reduces costs and minimize risk of supply shortages and blackouts

Key Enablers

- **Strong Regional Trust and Collaboration**
- **Harmonized Rules and Market Frameworks**
- **Real-Time Data Sharing and Transparency**
- **Aligned Market Mechanisms and Price Signals**
- **Clear Governance and Dispute Resolutions**

Financial Results of Regional Cooperation

Main sources of benefits:

- Cheaper procurement of balancing energy within an expanded area
- Netting of opposing imbalances
- Better utilization of interconnections
- Reduced need for local reserves

WEIM, operated CISO (USA)

- **$1.62 Billion** economic benefits to participants during **2025**
- Total cumulative savings - **$8.24 billion since** the market's launch in **2014.**

SPP WEIS (USA)

- Analysis of 2024 data found annual net benefits of **$3.9 billion,** provided at a benefit-to-cost ratio of 21-to-1

European imbalance netting (ENTSO-E/IGCC)

- The cost of netting imbalances amounted to **€23 million** over a single month of observation, which equates to approximately **€90 million per year**

Nordic aFRR capacity market

- In the **first 106 days,** the total economic impact amounted to **€122.2 million**
- In **2024**, the economic surplus from the exchange of balancing capacity amounted to **€200.282 million**

Figures from different markets are not fully comparable, as operators use different valuation methods;

Key Principles of Proposed Regional Balancing Market (RBM)

Participation

Voluntary participation of the Countries

TSO to TSO model

Neutrality

Equal market access

Non-discrimination among participants

Proportionate obligations and requirements

Reforms at Desired Pace

Countries can retain access to the Regional Balancing Market while national market reforms progress at different speeds

Flexibility

Regional Balancing Market framework can be scalable and adaptable to the changes in national systems and future regional market development

Key Principles of Proposed Regional Balancing Market (RBM)

Imbalance

Countries bear financial responsibility for imbalances

Imbalances are determined for each settlement hour

Balancing Electricity

Imbalances are covered through balancing energy

mFRR energy only at the initial stage

Financial Settlement

Imbalance price covers the cost of balancing energy

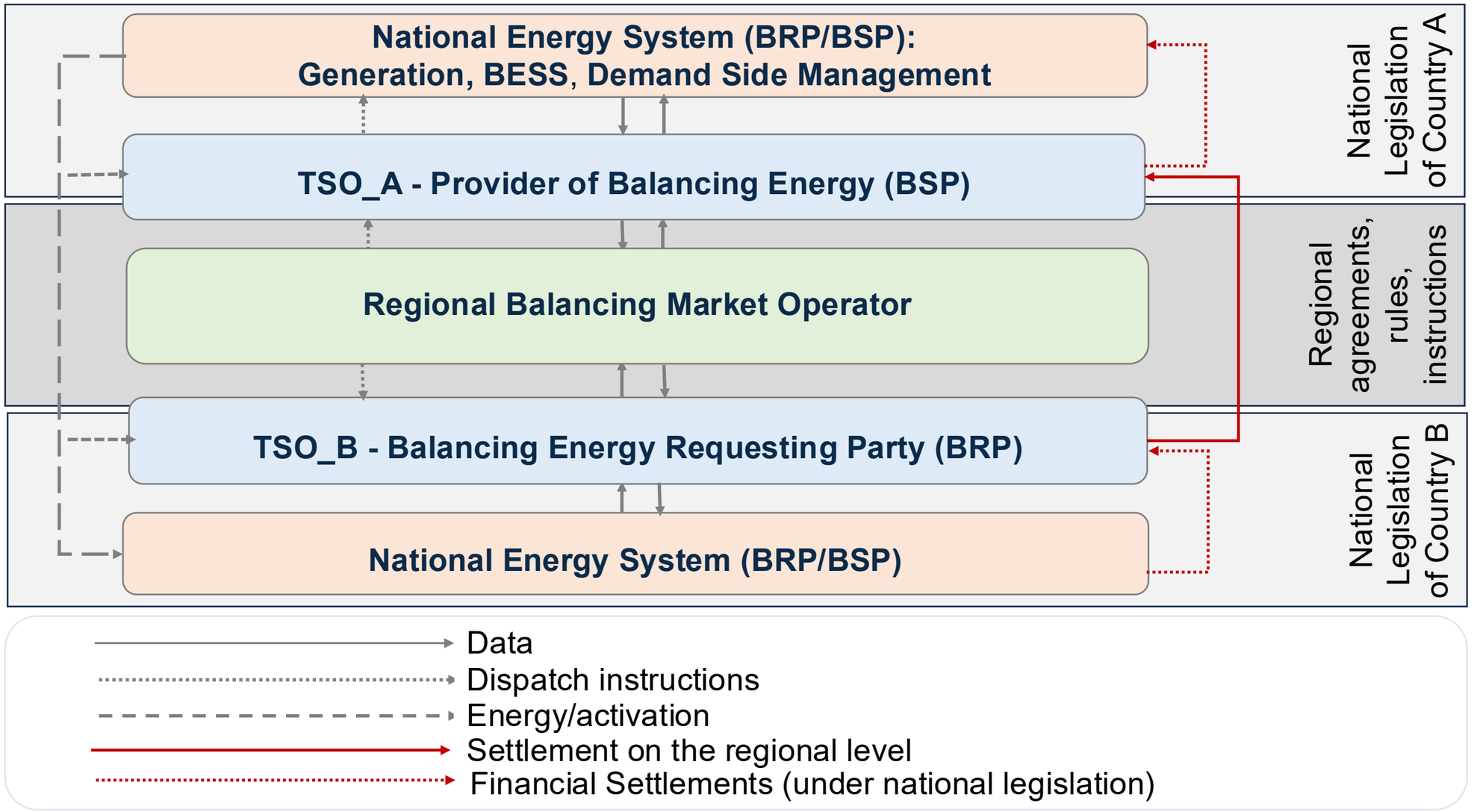
Imbalance costs are settled by the TSOs

Settlement Period: 1 Hour

All settlements are carried out on an hourly basis

Imbalance Price is determined based on the system balancing cost

Data, Energy, and Settlement Flows in the RBM



Regional Balancing Market Evolution Path

Stage 1
mFRR energy only RBM

- Financial responsibility for imbalances
- Hourly imbalance settlement
- Activation of mFRR energy only
- Imbalance netting
- Minimum required data set
- Dedicated software

Stage 2
Extended RBM

- Launch of the balancing capacity market and phased expansion of the balancing product portfolio, including aFRR
- Further development of dedicated software

Stage 3
Competitive RBM

- Direct participation of national market participants
- Fully competitive market for balancing capacity and balancing energy
- Equal access for qualified participants to submit bids
- Market-based pricing and full financial settlement through dedicated software

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Roadmap for Regional Balancing Market Launch

Key Elements of Stage 1

1. Political start

- RBM launch memorandum signed by participating countries
- Objectives, principles, phased approach and format of interstate coordination

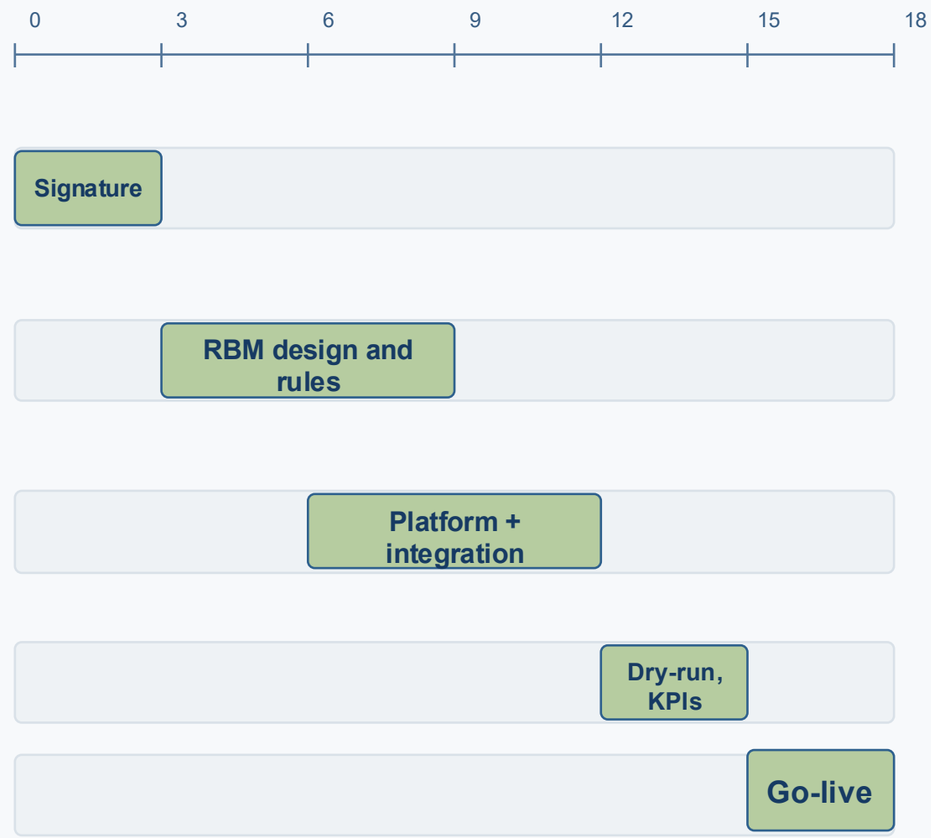
2. Contractual framework

- Balancing cooperation agreement with annexes
- RBM design; roles of TSOs and Balancing Market Operator
- Products, bid format, activation timelines and protocols

3. IT and go-live

- RBM platform: bid registry, netting, prioritization, registration. settlememt and result transparency
- Integration with national TSO systems, pilot, KPIs and commercial go-live

Indicative launch timetable



** Timing is indicative and may be refined after intergovernmental alignment.*

** RBM platform should be developed in parallel with rulemaking so that integration, accounting, result transparency and settlement notices are ready by the start of the pilot.

Readiness for Regional Balancing Market in CAPS Countries

Factors	Current Status	Readiness
Regional Operational Coordination	Existing coordination among countries through CDC Energyia	High
Balancing Resources Availability	Significant hydro and thermal flexibility, BESS	High
Real-Time System Monitoring	Uneven SCADA/EMS capabilities across countries	Medium
Hourly Metering Infrastructure	Limited deployment and data granularity	Medium
Imbalance Settlement Methodology	Different national approaches	Low
Balancing Energy Pricing Principles	Lack of harmonized pricing framework	Low
Regulatory Harmonization	Different market and regulatory models	Low

Thank You